

repens var. *glabrescens* Kuntze from the vicinity of Philadelphia: "New Jersey, Camden, *Parker in 1870, in 1866.* Pennsylvania, Philadelphia, without collector's name; Delaware Co., Hog Island, *Fogg 9775.*"

A letter was sent by the writer to William T. Davis inquiring about any possible information on the establishment of *Jussiaea* in Richmond Co., but he received the sad news from Mr. Coles, the Director of the S. I. Institute of Arts and Sciences, that the venerable authority on Staten Island had recently died. The query was transferred to Mr. Ellison, President of the Bird and Nature Club of Staten Island, who reported that none of the members of the club had observed *Jussiaea uruguayensis*.

Vouchers (*Monachino 427*) for the subject of the present discussion are deposited in the Gray Herbarium and the New York Botanical Garden.

NEW YORK BOTANICAL GARDEN

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF
HARVARD UNIVERSITY—NO. CLVII

M. L. FERNALD

I. KEY TO ANTENNARIA OF THE "MANUAL RANGE"

(Continued from page 235)

26. *A. FARWELLII* Greene, *Pittonia*, iii. 347 (1898); Fernald in *RHODORA*, xxxviii. 230, t. 433, fig. 3 (1936). Very local, Bruce Pen., Ont., and Keweenaw Co., Mich. Staminate plant unknown. June, early July.

27. *A. MUNDA* Fernald, l. c. 229, t. 433, figs. 1 and 2 (1936). *A. occidentalis* sensu Robinson & Fernald in Gray, *Man.* ed. 7, 821, fig. 879 (1908), not Greene. Centr. Me. to Thunder Bay Distr., Ont., s. to Mass., Ct., N. Y., e. Va. (local), W. Va., n. Ind., Wisc. and Minn. Staminate plant very rare. Mid-May–mid-June.

28. *A. FALLAX* Greene, *Pittonia*, iii. 321 (1898); Fernald in *RHODORA*, i. 74 (1899). *A. arnoglossa*, var. *ambigens* Greene, *Pittonia*, iii. 320 (1898). *A. Parlinii*, var. *ambigens* (Greene) Fernald in *Proc. Bost. Soc. Nat. Hist.* xxviii. 244 (1898). *A. ambigens* (Greene) Fernald in *RHODORA*, i. 150 (1899). *A. plantaginifolia*, var. *ambigens* (Greene) Cronquist, l. c. 183 (1945). Centr. Me. to s. Ont. and Minn., s. to Va., Tenn., Ark. and e. Tex. Staminate plants abundant southw. and westw., rare northeastw. April–July. PLATES 945 and 946.

Var. CALOPHYLLA (Greene) Fernald, l. c. xxxviii. 230 (1936). *A. calophylla* Greene, Pittonia, iii. 347 (1898). Ga. to Tex., n. to s. Md., Va., s. Mich., s. Ill. and Mo. PLATES 947 and 948.

29. *A. PARLINII* Fernald in Gard. and For. x. 287 (1897), in Asa Gray Bull. v. 92, t. 2, figs. 1-5 (1897) and in Proc. Bost. Soc. Nat. Hist. xxviii. 243 (1898). Western N. B. and se. Me. to s. Ont., s. to Ga., O., Ind., Ill. and Ia. Staminate plants freq. southw. and westw., rare northeastw. April-early June. PLATES 949 and 950.

Var. ARNOGLOSSA (Greene) Fernald in Proc. Bost. Soc. Nat. Hist. xxviii. 244 (1898); RHODORA, i. 151 (1899). *A. arnoglossa* Greene, Pittonia, iii. 318 (1898). *A. plantaginifolia*, var. *arnoglossa* (Greene) Cronquist, l. c. (1945). Similar range, s. to N. C., Tenn. and Mo. Late March-early June. PLATE 951.

30. *A. BRAINERDII* Fernald in RHODORA, i. 153 (1899). W-centr. Me. to Ont., s. to Ct., N. Y., mts. of Va., and n. Mich. Staminate plant unknown. Mid-May-mid-June. PLATES 952 and 953.

31. *A. PLANTAGINIFOLIA* (L.) Hook. Fl. Bor.-Am. i. 330 (1834), as to basonym only; Greene, Pittonia, iii. 173 (1897). *Gnaphalium plantaginifolium* L. Sp. Pl. 850 (1753), typified by the Plukenet plant but excluding the Gronovian, which belongs to the next species. *G. plantagineum* L. Syst. ed. 12: 545 (1767), with same description, with phrases rearranged, as of his *G. plantaginifolium* (1753), therefore an illegitimate substitute. *G. dioicum*, β . *plantaginifolium* (L.) Michx. Fl. Bor.-Am. ii. 128 (1803) as to basonym and as to plant "corymbo", not as to plant "unifloro; flore manifeste majore". *A. plantaginea* (L.) R. Br. in Trans. Linn. Soc. xii. 123 (1818); Richardson in Append. Frankl. Narr. ed. 2: 758-repr. 30 (1823)—Richardson often erroneously given as author of the combination *A. plantaginifolia*, including later auth., for instance Fernald in Asa Gray Bull. v. 92, t. 2, fig. 6 (1897), the fig. showing the Plukenet TYPE, and in Proc. Bost. Soc. Nat. Hist. xxviii. 242 (1898). *Disynanthus* Raf. in Am. Mo. Mag. ii. 268 (1818), undefined generic name based on the confused *Gnaphalium plantaginifolium* L. *Disynanthus plantagineus* (L.) Raf. ex Jackson in synonymy in Ind. Kew. fasc. ii. 782 (1893), this illegitimate combination based on an illegitimate (substitute) name united with a nonvalid (undefined) generic name for a wholly mixed basic specific concept (great work!). *A. decipiens* Greene, Pittonia, iii. 278 (1898). Sw. Me. to Minn., s. to Ga., Ala. and Mo. Staminate and pistillate plants abundant. April-June. PLATES 954 and 955. Passing into

Var. PETIOLATA (Fernald) Heller, Muhlenbergia, i. 5 (1900). *A. plantaginea*, var. *petiolata* Fernald in Proc. Bost. Soc. Nat. Hist. xxviii. 242 (1898). Sw. Me. to e. N. Y., s., locally, to Va. PLATE 956.

32. *A. SOLITARIA* Rydb. in Bull. Torr. Bot. Cl. xxiv. 304 (1897). *Gnaphalium plantaginifolium* L. Sp. Pl. 850 (1753) as to description in part and including the Gronovian *Gnaphalium stolonibus reptatricibus longissimis, foliis ovatis, caule capitato* (OUR PLATE 957). *G. dioicum*, β . *plantaginifolium* (L.) Michx. Fl. Bor. Am. ii. 128 (1803) in part, the plant "caule brevior, unifloro; flore manifeste majore . . . in occidentalibus Alleghanis montibus". *A. plantaginifolia*, β . *monocephala* Torr. & Gray, Fl. ii. 431 (1843). *Gnaph. monocephalum* Carpenter ex Torr. & Gray, l. c. in synonymy (1843). *A. monocephala* (Torr. & Gray) Greene, Pittonia, iii. 176 (1897), not DC. (1837). Md. and w. Pa. to Ind., s. to Ga., Ala. and La. Staminate and pistillate plants about equally abundant. April, May. PLATES 957 and 958.

Although *Antennaria solitaria* was not at first specifically separated from the utterly different *A. plantaginifolia*, as typified by Plukenet's plant, it was well known to Clayton and Gronovius, as well as to Linnaeus. Those who are familiar with the plant could scarcely confuse it with anything else. Nevertheless, this was done until Michaux in 1803 commented on it as a variation but without formally separating it. Cronquist, in the most recent discussion of the genus (preceding the present one) concedes that the two species which were elements of the Linnean *Gnaphalium plantaginifolium* are really distinct species, *A. solitaria*, "the single-headed southern plant with certain [unstated] habital peculiarities". He admits just one more species in all our diversified area, *A. neglecta*, which, like *A. solitaria*, has flagelliform stolons. When, in forma *simplex*, *A. neglecta* puts its whole vigor into one exceptionally large head, as in Peck's original material (OUR PLATE 927) of what avail are the "certain habital peculiarities" without the technical morphological ones, especially when the rosette-leaves of *A. neglecta* are 1.5–6.5 cm. long and up to 1.3 cm. broad (PLATE 925), while those of *A. solitaria* are 2–8 cm. long and, in the smaller specimens, down to only 1.5 cm. broad (PLATE 958, FIG. 2)? The treatment of eastern North American *Antennaria* of two centuries ago was inadequate and confused. The latest student of the genus in our area, although not reuniting it with *Gnaphalium*, has otherwise got back essentially to the pre-Linnean stage. As Mary, Queen of Scots, is reputed to have said when her regal career was coming to its tragic conclusion, "In my end is my beginning".

I was once told, by one whose voluminous errors were too apparent, that I should not "knock" the assertive errors of men younger than myself; that I should expect them not to get many of their facts straight. When, however, a comparative beginner on our eastern flora urges me to see through the press his characterization, as "too dependent on temporary whim", of my species, which have been defined after intensive field- and herbarium-study over a period of a third of a century, it is surely not unreasonable to expect him to show evidence of at least an elementary understanding of the very numerous characters of our eastern species. It must be assumed, apparently, that his very off-hand reduction of one of the few plants which fully satisfies his theoretical requirement (abundance of both sexes) for a species, Stebbins's presumably ancestral *A. virginica* of the ancient Appalachian Upland, and the reduction of or complete ignoring of my 11 described species from Gaspé County, Quebec, westward and southward—it must be assumed that, if he fails to uphold such a theoretically ideal species as *A. virginica*, he would similarly wipe out of consideration the embarrassing scores of species known, locally, from Newfoundland to Greenland and across boreal America and defined by Ostenfeld, Ekman, the Porsilds, Malte, Polunin and, obviously, myself. It is well to be forewarned of their impending doom and to prepare to lie down and meekly to watch them degraded!

In view of the actual situation in *Antennaria* and that in *Hieracium*, Cronquist's warning that "The chaotic condition which has been brought about in some European genera that also show well-developed apomixis, such as *Hieracium*, should give pause to those who have so multiplied our species", is worth a moment's consideration. There seems here to be an assumption that the behavior of apomicts in *Antennaria* and *Hieracium* (perhaps also *Taraxacum*) is comparable. It is, but certainly not identical nor very similar. Those who have lived and explored all their lives in eastern North America are painfully aware of the dominating aggressiveness and rampageous destructiveness, beginning in the late '70's and expanding almost daily in the open season, of the small host of apomicts in *Hieracium* from the very modern flora of Europe, the various species known as King Devil, Devil's Paint-brush and other equally contemptu-

ous names. They also know that, except for occasional crossing of *H. Gronovii* or *H. scabrum* with *H. venosum*, our native *Hieracia* are relatively well-behaved. Similarly the mass of inextricable apomicts known as *Taraxacum officinale* Weber [I was in error when I identified them with *T. palustre* (Sm.) Blytt] are among the most aggressive of all our weeds; but how many of our eastern botanists know the strictly indigenous and morphologically very definite species of our area: *T. phymatocarpum*, *T. ceratophorum*, *T. laurentianum*. *T. dumetorum* or *T. Longii*? Very few, because they are conservative and local species which have to be sought; they do not intrude upon us like the more familiar apomicts of the genus or of *Hieracium*. Now, in *Antennaria* our nonapomictic species, *A. virginica* (PLATE 937), *A. neglecta* (PLATES 924–926), *A. plantaginifolia* (PLATES 954–956) and *A. solitaria* (PLATES 957 and 958), for example, are abundant and as nearly dominating as any members of the genus with us; but, as compared with the apomictic *Pilosella* group of *Hieracium* or the heteromorphic apomicts of *Taraxacum officinale*, they are shy and retiring amateurs. And, whereas the endless apomicts in European *Hieracium* and in the European *Taraxacum officinale* bunch are unrestrainedly aggressive, the unisexual (apomictic) *Antennarias* are local and relatively rare and usually highly selective as to habitat: *A. columnaris*, a species with remarkable individuality and with corollas only 4 mm. long, the achenes 1.2 mm. long, known only on the barrens at the base of Pointe Riche in Newfoundland, there associated with the utterly different *A. Foggii*, unique in having the outer phyllaries agglutinated and thus forming a falsely gamophyllous cup, the corollas 5–5.5 mm. long and the achenes 1.7 mm. long; *A. vexillifera* (PLATE 913), discussed on p. 224, one of the tiniest of species, with 4–6 of the cauline leaves terminated by broad pennant-like scarious appendages 1.5–3 mm. long, known only from an alpine barren in Gaspé and similar barrens in Newfoundland; *A. subviscosa* (PLATES 916 and 917), discussed on p. 225, forming dense carpet-like mats (with crowded trailing branches up to 5 dm. long and heavily covered with marcescent leaves) on the calcareous north-facing cliffs near the lower St. Lawrence from Rimouski Co. to Gaspé Co., Quebec, the upper nodes of the stem and the inflorescence viscid, the cauline leaves with subulate or involute (in-

stead of flat and pennant-like) tips, the viscid pale involucre often pink-tinged. Other chiefly pistillate but sometimes staminate species, like *A. canadensis* (PLATES 922 and 923), *A. petaloidea* (PLATES 940-944) and *A. munda*, occur over broader ranges; while species such as *A. Parlinii* (PLATES 949-951) and *A. fallax* (PLATES 945 and 946), abundantly bisexual southward or westward but wholly or chiefly pistillate northeastward, are as wide-spread as any. If there is a universal rule for apomicts, *Hieracium*, *Taraxacum* and *Antennaria* do not make it perfectly clear.

EXPLANATION OF PLATES 912-958

PLATE 912. *ANTENNARIA EUCOSMA* Fernald, all figs. from TYPE-series: FIGS. 1 and 2, a pistillate and a staminate plant, $\times 1$; FIG. 3, pistillate involucre, $\times 6$; FIG. 4, a single pistillate flower, $\times 10$; FIG. 5, pistillate corollas, $\times 10$; FIG. 6, achene, $\times 10$.

PLATE 913. *A. VEXILLIFERA* Fernald: FIG. 1, pistillate plant, $\times 1$, from TYPE-series; FIG. 2, basal rosette, $\times 5$, from Boat Harbor, Straits of Belle Isle, Newfoundland, *Fernald, Wiegand & Long*, no. 29,172; FIG. 3, tip of cauline leaf, $\times 10$, from Cook Point, Pistolet Bay, Newfoundland, *Fernald & Gilbert*, no. 29,171; FIG. 4, inflorescence, $\times 2$, from no. 29,171; FIG. 5, involucre, $\times 6$, from TYPE; FIGS. 6 and 7, pistillate corollas and achenes, $\times 10$, from Eastern Point, St. John Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2085.

PLATE 914. *A. STRAMINEA* Fernald: FIGS. 1 and 2, two plants, $\times 1$, from TYPE-sheet; FIG. 3, portion of basal rosette, $\times 5$, from TYPE; FIG. 4, tips of two cauline leaves, $\times 5$, from St. John Island, St. John Bay, Newfoundland, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,170; FIG. 5, inflorescence, $\times 2$, from no. 29,170; FIG. 6, involucre, $\times 5$, from TYPE; FIGS. 7 and 8, corolla and achenes, $\times 10$, from no. 29,170.

PLATE 915. *A. PEASEI* Fernald, all figs. from TYPE: FIG. 1, pistillate plant, $\times 1$; FIG. 2, basal rosette, $\times 5$; FIG. 3, tip of cauline leaf, $\times 10$; FIG. 4, inflorescence, $\times 2$.

PLATES 916 and 917. *A. SUBVISCOSA* Fernald: PLATE 916, small portion of one large plant, $\times \frac{3}{5}$, trailing down a limestone wall, Bic, Quebec, *Fernald & Collins*, no. 1195, part of TYPE (note marcescent old flowering stems), after photo. by *J. F. Collins*. PLATE 917, FIGS. 1 and 2, two small plants, $\times 1$, from TYPE-series; FIG. 3, basal leaves, $\times 5$, from TYPE; FIG. 4, tip of cauline leaf, $\times 10$, from TYPE; FIG. 5, mature inflorescence, $\times 2$, from Gros Morne, Gaspé Co., Quebec, *Fernald & Weatherby*, no. 2475; FIG. 6, involucre, $\times 6$, from TYPE; FIGS. 7 and 8, corollas, $\times 10$, and achenes, $\times 10$, from Cap Pleureuse, Gaspé Co., Quebec, *Fernald, Weatherby & Stebbins*, no. 2474.

PLATE 918. *A. ALBICANS* Fernald: FIG. 1, group of plants, $\times 1$, from TYPE-sheet; FIG. 2, basal rosettes, $\times 5$, from TYPE; FIG. 3, tip of cauline leaf, $\times 10$, from Eastern Point, St. John Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2083; FIG. 4, inflorescence, $\times 2$, from no. 2083; FIG. 5, pistillate flower, $\times 10$, from TYPE; FIG. 6, achenes, $\times 10$, from TYPE.

PLATE 919. *A. WIEGANDII* Fernald: FIG. 1, plant and basal rosette, $\times 1$, from TYPE-sheet; FIG. 2, basal rosette, $\times 5$, from Eastern Point, St. John Bay, Newfoundland, *Fernald, Long & Fogg*, no. 2098; FIG. 3, inflorescence, $\times 2$, from TYPE; FIG. 4, achenes, $\times 10$, from TYPE.

PLATE 920. *A. SPATHULATA* Fernald: FIG. 1, two plants, $\times 1$, from Table Mountain, Port-au-Port Bay, Newfoundland, *Fernald & St. John*, no. 10,870; FIG. 2, base, to show repent habit, $\times 1$, from Pointe Riche, Newfoundland, *Fernald, Long & Fogg*, no. 2109; FIG. 3, portion of rosette-leaf, $\times 5$, from no.

10,870; FIG. 4, inflorescence, $\times 2$, from Pointe Riche, *Fernald & Wiegand*, no. 4143; FIG. 5, portion of involucre, $\times 5$, from no. 10,870; FIG. 6, corollas, $\times 10$, from St. John Island, St. John Bay, Newfoundland, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,183; FIG. 7, achenes, $\times 10$, from no. 29,183.

PLATE 921. *A. APPENDICULATA* Fernald, all figs. from TYPE: FIGS. 1 and 2, portions of plant, $\times 1$; FIG. 3, upper half of rosette-leaf, $\times 5$; FIG. 4, tip of cauline leaf, $\times 10$; FIG. 5, corymb, $\times 2$; FIG. 6, achenes, $\times 10$.

PLATES 922 and 923. *A. CANADENSIS* Greene: PLATE 922, FIGS. 1 and 2, pistillate plant, $\times 1$, from Franconia, New Hampshire, June 13, 1897, *Edwin Faxon*; FIG. 3, tip of cauline leaf, $\times 10$, from same collection; FIG. 4, achenes, $\times 10$, from St. Ours, Co. de Richelieu, Quebec, *Rolland-Germain*, no. 43,516. PLATE 923, FIG. 1, staminate plant, $\times 1$, from Ile Perrot, Quebec, *Victorin*, no. 28,256; FIG. 2, basal leaves, $\times 5$, from Manchester, Vermont, June 30, 1898, *Mary A. Day*; FIG. 3, corymb, $\times 2$, from Masardis, Maine, *Fernald*, no. 2363.

PLATES 924–926. *A. NEGLECTA* Greene: PLATE 924, FIGS. 1 and 2, pistillate ISOTYPE, $\times 1$; FIG. 3, tip of cauline leaf from ISOTYPE; FIG. 4, pistillate inflorescence, $\times 2$, from Menands, Albany Co., New York, May 24, 1916, *House*; FIG. 5, pistillate inflorescence, $\times 2$, from Brookland, D. C., May 2, 1900, *Holm*. PLATE 925, FIGS. 1 and 2, broad-leaved plant, $\times 1$, from Ardsley, Montgomery Co., Pennsylvania, May 17, 1909, *B. Long*; FIG. 3, pistillate inflorescence, $\times 2$, from southeast of Ligonier, Noble Co., Indiana, *Deam*, no. 27,459; FIG. 4, achenes, $\times 10$, from Upland, Grant Co., Indiana, *Deam*, no. 15,779. PLATE 926, FIG. 1, staminate ISOTYPE; FIG. 2, tip of cauline leaf, $\times 10$, from staminate ISOTYPE; FIG. 3, pistillate inflorescence, $\times 2$, from Vaughan, New York, June 1, 1916, *Burnham*; FIG. 4, pistillate corolla, $\times 10$, from no. 15,779.

PLATE 927. *A. NEGLECTA*, forma SIMPLEX (Peck) Fernald: ISOTYPE, $\times 1$.

PLATE 928. *A. CAMPESTRIS* Rydb.: FIG. 1, pistillate plant, $\times 1$, from Custer, South Dakota, *Rydberg*, no. 794 (PARATYPE-collection); FIG. 2, staminate plant, $\times 1$, Deadwood, South Dakota, *E. J. Palmer*, no. 37,137; FIG. 3, tip of cauline leaf, $\times 10$, from Charlot Pt., Lake Athabaska, Saskatchewan, *Raup*, no. 6079; FIG. 4, corymb, $\times 2$, from no. 6079; FIG. 5, achenes, $\times 10$, from Charlot Pt., *Raup*, no. 5283.

PLATES 929 and 930. *A. RUPICOLA* Fernald: PLATE 929, FIG. 1, base of one of TYPE-specimens, $\times 1$; FIG. 2, rosette-leaves, $\times 5$, from TYPE; FIG. 3, tip of cauline leaf, $\times 10$, from TYPE. PLATE 930, FIG. 1, flowering summit of same plant as in plate 929, fig. 1; FIG. 2, corymb, $\times 2$, from TYPE; FIG. 3, receptacle, $\times 10$, from Grand Falls, Newfoundland, *Fernald, Wiegand, Bartram & Darlington*, no. 6344; FIG. 4, achenes, $\times 10$, from same station and same collectors, no. 6343.

PLATES 931 and 932. *A. NEODIOICA* Greene, var. TYPICA Fernald: PLATE 931, FIGS. 1, 2 and 3, portions of ISOTYPE, $\times 1$; FIG. 4, tip of rosette-leaf, $\times 5$, from northeast of Wenksville, Adams Co., Pennsylvania, *L. F. A. Tanger*, no. 4383; FIG. 5, tip of cauline leaf, $\times 10$, from ISOTYPE; FIG. 6, corymb, $\times 2$, from Mickleton, Gloucester Co., New Jersey, *B. Long*, no. 20,454; FIG. 7, portion of involucre, $\times 5$, from ISOTYPE. PLATE 932, FIGS. 1, 2 and 3, portions of staminate plants, $\times 1$, from Frazer, Chester Co., Pennsylvania, May 7, 1910, *Bartram*; FIG. 4, pistillate corolla, $\times 10$, from ISOTYPE; FIG. 5, achenes, $\times 10$, from ISOTYPE.

PLATE 933. *A. NEODIOICA*, var. ATTENUATA Fernald: FIGS. 1 and 2, portions of TYPE, $\times 1$; FIG. 3, tip of cauline leaf, $\times 10$, from Orono, Maine, *Fernald*, no. 2356 (PARATYPE); FIG. 4, inflorescence, $\times 2$, from no. 2356; FIG. 5, portion of involucre, $\times 5$, from Sangerville, Maine, July 7, 1897, *Fernald* (PARATYPE).

PLATE 934. *A. NEODIOICA*, var. INTERJECTA Fernald, all figs. from TYPE: FIG. 1, small plant and base and inflorescence of others, $\times 1$; FIG. 2, tips of rosette-leaves, $\times 5$; FIG. 3, tip of cauline leaf, $\times 10$; FIG. 4, corymb, $\times 2$; FIG. 5, corollas, $\times 10$; FIG. 6, achenes, $\times 10$.

PLATE 935. *A. NEODIOICA*, var. CHLOROPHYLLA Fernald, all figs. from TYPE: FIGS. 1 and 2, portions of plant, $\times 1$; FIG. 3, tip of rosette-leaf, $\times 5$; FIG. 4, involucre, $\times 5$; FIG. 5, corolla, $\times 10$.

PLATE 936. *A. NEODIOICA*, var. *GRANDIS* Fernald: FIGS. 1 and 2, portions of a plant, $\times 1$, from South Ashburnham, Massachusetts, May 30, 1904, *F. F. Forbes*; FIG. 3, two mature corymbs, $\times 1$, from Somesville, Maine, July 1, 1897, *E. L. Rand*; FIG. 4, corollas, and FIG. 5, achenes, from last collection.

PLATE 937, FIGS. 1-10. *A. VIRGINICA* Stebbins: FIGS. 1 and 2, pistillate, and 3 and 4, staminate plants (TYPE) $\times 1$; FIG. 5, rosette-leaf, $\times 5$, from TYPE; FIG. 6, tip of cauline leaf, $\times 10$, from East Furnace, Shenandoah Co., Virginia, *Lena Artz*, no. 4; FIG. 7, involucre, $\times 5$, from Hanging Rock, Hampshire Co., West Virginia, *W. M. Frye*, no. 4 (PARATYPE); FIG. 8, receptacle, $\times 10$, from last no.; FIG. 9, pistillate corollas, $\times 10$, from no. 4; FIG. 10, achenes, $\times 10$, from no. 4.

PLATE 937, FIGS. 11 and 12. *A. VIRGINICA*, var. *ARGILLICOLA* Stebbins: FIG. 1, base of TYPE, $\times 1$; FIG. 2, tip of cauline leaf, $\times 10$, from TYPE.

PLATES 938 and 939. *A. APRICA* Greene: PLATE 938, FIG. 1, pistillate plant and corymbs, $\times 1$, from near Deadwood, South Dakota, *E. J. Palmer*, no. 37,116; FIG. 2, pistillate corymb, $\times 2$, from Perham, Ottertail Co., Minnesota, May 31, 1912, *Z. L. Chandonnet*; FIG. 3, pistillate flower and corolla, $\times 10$, from Mouth of Qu'Appelle River, Manitoba, *Wm. Herriot*, Geol. Surv. Can., no. 72,845; FIG. 4, achenes, $\times 10$, from no. 72,845. PLATE 939, FIG. 1, staminate plant, $\times 1$, from Valentine, Nebraska, June 30, 1891, *J. M. Bates*; FIG. 2, basal rosette, $\times 5$, from same specimen; FIG. 3, upper half of cauline leaf, $\times 10$, from Perham, Minnesota, *Chandonnet*; FIG. 4, pistillate involucre, $\times 5$, from *Herriot*, no. 72,845.

PLATES 940 and 941. *A. PETALOIDEA* Fernald (typical): PLATE 940, FIGS. 1, 2 and 3, portions of TYPE, $\times 1$; FIG. 4, base of plant, to show repent habit, $\times 1$, from Foxcroft, Maine, *Fernald*, no. 2390; FIG. 5, tip of cauline leaf, $\times 10$, from TYPE; FIG. 6, half of corymb, $\times 2$, from TYPE. PLATE 941, FIG. 1, staminate plant, $\times 1$, from Harwich, Massachusetts, *Fernald*, no. 19,243; FIG. 2, tips of basal rosette, $\times 5$, from Milo, Maine, Sept. 2, 1897, *Fernald*; FIG. 3, pistillate involucre, $\times 5$, from TYPE; FIG. 4, pistillate corolla, $\times 10$, from TYPE.

PLATE 942. *A. PETALOIDEA*, var. *SCARIOSEA* Fernald: FIGS. 1 and 2, portions of TYPE, $\times 1$; FIG. 3, corymb, $\times 2$, from a TYPE-specimen; FIG. 4, exceptionally lax corymb, $\times 2$, from TYPE-series; FIG. 5, involucre, $\times 5$, from TYPE.

PLATES 943 and 944. *A. PETALOIDEA*, var. *SUBCORYMBOSA* Fernald: PLATE 943, FIGS. 1 and 2, portions of TYPE-series, $\times 1$; FIG. 3, tip of cauline leaf, $\times 10$, from TYPE; FIG. 4, involucre, $\times 5$, from TYPE; FIG. 5, pistillate corollas, $\times 10$, from near Charlottetown, Prince Edward Island, *Fernald & St. John*, no. 11,205; FIG. 6, achenes, $\times 10$, from no. 11,205. PLATE 944, FIG. 1, portions of two large inflorescences, FIG. 2, summit of inflorescence at right, $\times 1$, from Cemetery, Jordan Pond Road, Mt. Desert Island, Maine, June 4, 1901, *E. L. Rand*.

PLATES 945 and 946. *A. FALLAX* Greene: PLATE 945, pistillate plant: FIGS. 1 and 2, base and summit of flowering plant, $\times 1$, from Chestnut Hill, Pennsylvania, May 3, 1889, *Heller*; FIG. 3, corymb, $\times 1\frac{7}{8}$, from same collection; FIG. 4, achenes, $\times 10$, from Ferrisburg, Vermont, *Eggleston*, no. 2645. PLATE 946, FIG. 1, staminate plant, $\times 1$, from Agricultural College, Michigan, May 6, 1898, *C. F. Wheeler*; FIG. 2, involucre of pistillate head, $\times 6$, from Chevy Chase Lake, Maryland, *Maxon & Standley*, no. 291; FIG. 3, pistillate corollas, $\times 10$, from *Eggleston*, no. 2645.

PLATES 947 and 948. *A. FALLAX*, var. *CALOPHYLLA* (Greene) Fernald: PLATE 947: pistillate plant: FIGS. 1 and 2, portions of base and summit, $\times 1$, of plant from Cape Girardeau, Missouri, *E. J. Palmer*, no. 39,081; FIG. 3, portion of involucre, $\times 6$, from same no. PLATE 948, FIG. 1, staminate plant, $\times 1$, an ISOTYPE from Cobden, Illinois, June 15, 1898, *E. L. Greene*; FIG. 2, pistillate inflorescence, $\times 1\frac{3}{4}$, from *E. J. Palmer*, no. 39,081.

PLATES 949 and 950. *A. PARLINII* Fernald: PLATE 949, pistillate plant: FIGS. 1 and 2, base and summit, $\times 1$, of one of TYPE-specimens; FIG. 3, summit of flowering stem, to show dark glands, $\times 10$, from Foxcroft, Maine, *Fernald*, no. 2340; FIG. 4, corymb, $\times 3$, from TYPE; FIG. 5, achenes, $\times 10$, from TOPO-

TYPE, June 5, 1897, *Parlin*. PLATE 950, FIGS. 1 and 2, staminate plant, $\times 1$, from TYPE-locality, May 28, 1899, *Parlin*; FIG. 3, portion of pistillate involucre, $\times 6$, from TOPOTYPE; FIG. 4, pistillate corollas, $\times 10$, from TOPOTYPE.

PLATE 951. *A. PARLINII*, var. *ARNOGLOSSA* (Greene) Fernald: FIGS. 1 and 2, portion of base and summit, $\times 1$, of ISOTYPE; FIG. 3, involucre, $\times 6$, from ISOTYPE.

PLATES 952 and 953. *A. BRAINERDII* Fernald: PLATE 952, from ISOTYPE, Barber's Meadow, Addison, Vermont, May 27, 1899: FIGS. 1 and 2, base and summit of plant, $\times 1$; FIG. 3, summit of stem, to show dark glands, $\times 10$; FIG. 4, an inflorescence, $\times 6$; FIG. 5, achenes, $\times 10$. PLATE 953, FIG. 1, portion of base, showing unusually large leaves, $\times 1$, from Mt. Battie, Camden, Maine, July, 1902, *G. G. Kennedy*; FIG. 2, loose pubescence of upper surface of rosette-leaf, $\times 10$, from same specimen; FIG. 3, involucre, $\times 6$, from TYPE; FIG. 4, corollas, $\times 10$, from TYPE.

PLATES 954 and 955. *A. PLANTAGINIFOLIA* (L.) Hooker: PLATE 954, pistillate plant: FIGS. 1 and 2, base and summit of plant from type-region, $\times 1$, west of Williamsburg, Virginia, *Grimes*, no. 2543; FIG. 3, involucre, $\times 6$, from no. 2543; FIG. 4, corollas, $\times 10$, from no. 2543. PLATE 955, FIG. 1, staminate plant from type-region, $\times 1$, from west of Lake Matoka, James City Co., Virginia, *J. T. Baldwin*, no. 204; FIG. 2, inflorescence, $\times 6$, from *Grimes*, no. 2543; FIG. 3, achenes, $\times 10$, from no. 2543.

PLATE 956. *A. PLANTAGINIFOLIA*, var. *PETIOLATA* (Fernald) Heller, all figs. from TYPE-series: FIGS. 1 and 2, small fruiting plant, $\times 1$; FIG. 3, staminate plant, $\times 1$.

PLATES 957 and 958. *A. SOLITARIA* Rydberg: PLATE 957, FIG. 1, tracing, $\times 1$, of the Gronovian element, of *Gnaphalium plantaginifolium* L., "*Gnaphalium stolonibus reptatricibus longissimis, foliis ovatis, caule capitatis. Gron. virg. 95*", after *B. L. Robinson*; FIG. 2, one of the TYPE-specimens (pistillate), $\times 1$, of *A. plantaginifolia*, β . *monocephala* Torrey & Gray (basis of *A. solitaria*), coll. Louisiana, *Carpenter*. PLATE 958, FIG. 1, average plant (staminate), $\times 1$, from Williamsburg, Virginia, *Fernald, Long & Abbe*, no. 14,241; FIG. 2, very small plant (staminate) $\times 1$, from Chapel Hill, North Carolina, *Pease*, no. 26,998; FIG. 3, achenes, $\times 10$, from north of Medora, Jackson Co., Indiana, *Deam*, no. 24,771.

II. TRANSFERS IN AND ANIMADVERSIONS ON ARTEMISIA

ARTEMISIA GLAUCA Pall., var. *dracunculina* (S. Wats.), comb. nov. *A. dracunculina* S. Wats. in Proc. Am. Acad. xxiii. 279 (1888). *A. Dracunculus* L., subsp. *dracunculina* (S. Wats.) Hall & Clements, Phylogen. Meth. in Taxon. 116 (1923). *A. dracunculoides* Pursh, var. *dracunculina* (S. Wats.) Blake in Journ. Wash. Acad. Sci. xxx. 472 (1940).

I get no satisfaction in trying to separate *Artemisia dracunculoides* Pursh (1814) from *A. glauca* Pallas (1804). At best they seem to be confluent forms of one species, the degree of pubescence or glabrousness and of glaucescence or greenness being most difficult to distinguish. Var. *dracunculina* is more tangible, with its loose inflorescence and nodding or pendulous long-pedicelled heads. In the type the filiform pedicels are 4–8 mm. long (Watson said "2 to 4 lines"), in *Hartman* no. 778, also from

Chihuahua, up to 9 mm., and extreme specimens, such as *J. H. Oyster*, no. 2 from Kansas, and *Bush*, no. 4121 from Greenwood, Missouri (distrib. as *A. mexicana* Willd.), have them (or the filiform minutely bracteate monocephalous branchlets) prolonged to 2–3.5 cm.!

Some botanists, overlooking the fact that the name *Artemisia glauca* Pall. (1804) antedates *A. dracunculoides* Pursh (1814), are using the combination *A. dracunculoides*, var. *glauca* (Pall.) Munz, Man. So. Cal. Bot. 575 and 601 (1935).

A. LUDOVICIANA Nutt., var. **cuneata** (Rydb.), stat. nov. *A. cuneata* Rydb. in N. Am. Fl. xxiv³. 269 (1916).

A. LUDOVICIANA Nutt., var. **Brittonii** (Rydb.), stat. nov. *A. Brittonii* Rydb. in Bull. Torr. Bot. Cl. xxxii. 129 (1905).

A. LUDOVICIANA Nutt., var. **pabularis** (Nelson), comb. nov. *A. rhizomata* Nelson, var. *pabularis* Nelson in Bull. Torr. Bot. Cl. xxvii. 34 (1900). *A. pabularis* (Nelson) Rydb. in Bull. Torr. Bot. Cl. xxxiii. 137 (1906).

A. LUDOVICIANA Nutt., var. **americana** (Bess.), comb. nov. *A. vulgaris* L., var. *americana* Besser in Linnaea, xv. 105 (1841) in part.

A. LUDOVICIANA Nutt., var. **mexicana** (Willd.), comb. nov. *A. mexicana* Willd. ex Spreng. Syst. iii. 490 (1828). *A. indica* Willd., var. *mexicana* (Willd.) Besser in Nouv. Mém. Soc. Nat. Mosc. iii. 56 (1834). *A. vulgaris* L., var. *mexicana* (Willd.) T. & G. Fl. N. Am. ii. 421 (1843). *A. vulgaris*, subsp. *mexicana* (Willd.) Hall & Clements, Phylogen. Meth. Tax. 80 (1923) in part.

I get no intellectual satisfaction from the treatment of *Artemisia* by Hall & Clements. Although published under the sophisticated title "The Phylogenetic Method in Taxonomy", this treatment, it seems to me, does serious injury to sound taxonomy and its natural ally, sound phylogeny. My chief objection is, that fundamental characters in growth-habit, such as one would expect to be given real weight, were ignored or, apparently not recognized. Under the single blanket-name, *A. vulgaris*, Hall & Clements: amassed plants of most diverse habit: species with rounded and deeply dissected leaves with stipule-like appendages at the base, others with comparable leaves but no appendages; species with strictly entire long-attenuate leaves, others with them variously dissected; species with heavy ligneous and non-stoloniferous crowns, others with herbaceous slender rhizomes and prolonged lash-like stolons; plants with densely tufted habit,

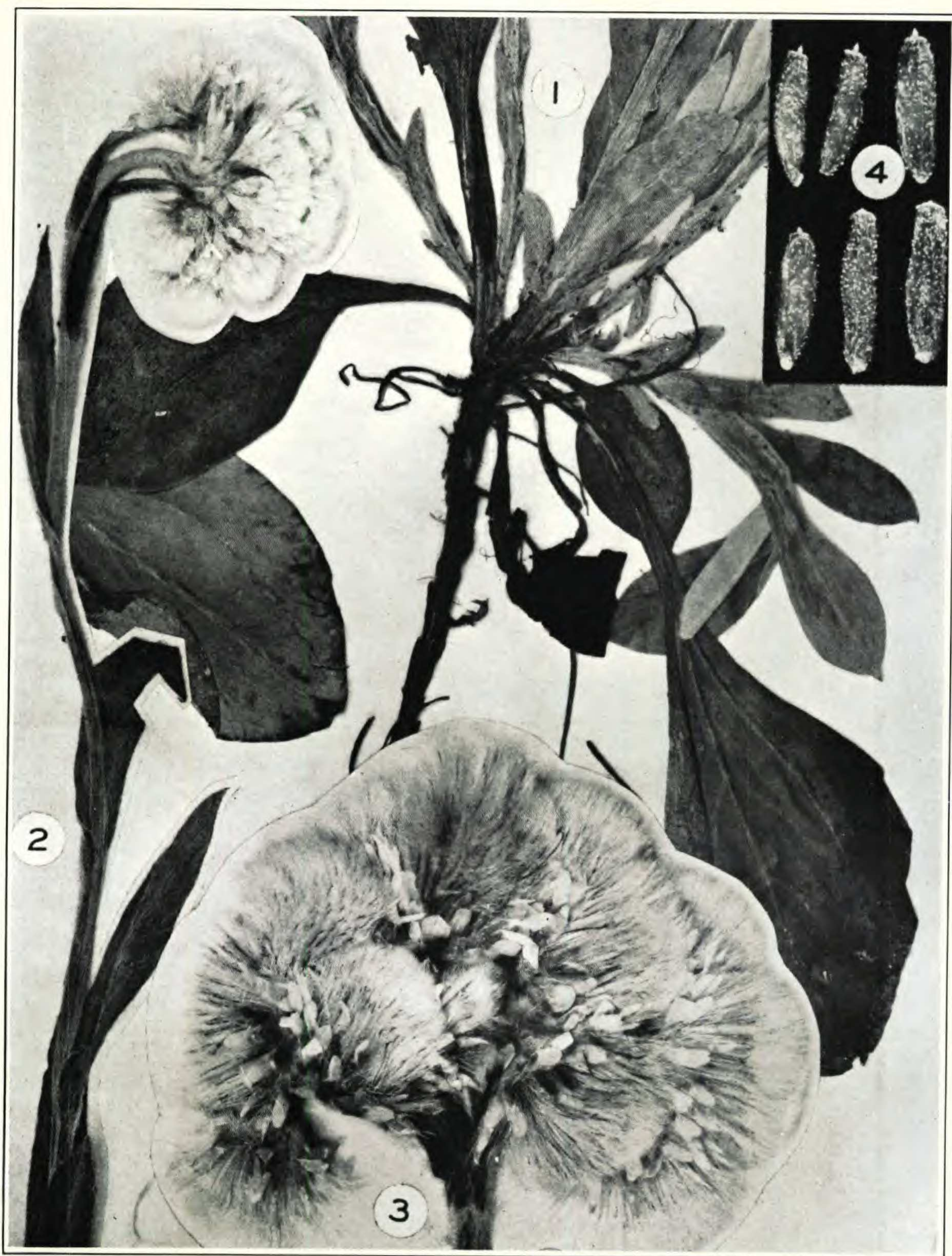


Photo. B. G. Schubert.

ANTENNARIA FALLAX: FIGS. 1 and 2, base and summit of pistillate plant, $\times 1$; FIG. 3, corymb, $\times 2$; FIG. 4, achenes, $\times 10$.

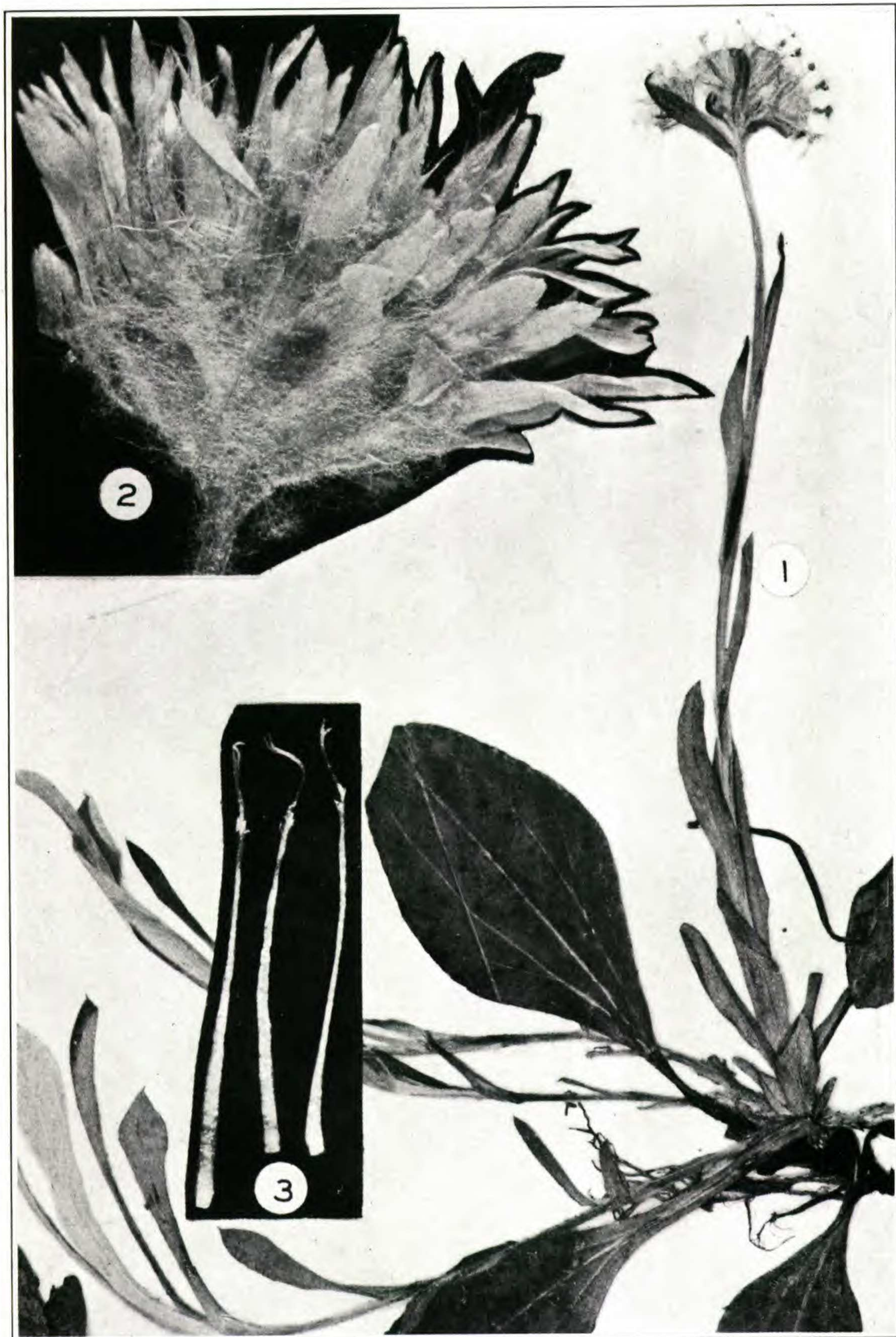


Photo. B. G. Schubert.

ANTENNARIA FALLAX: FIG. 1, staminate plant, $\times 1$; FIG. 2, pistillate involucre, $\times 5$; FIG. 3, pistillate corollas, $\times 10$.



Photo. B. G. Schubert.

ANTENNARIA FALLAX, var. CALOPHYLLA: FIGS. 1 and 2, portions of base and summit of pistillate plant, $\times 1$; FIG. 3, half of involucre, $\times 5$.

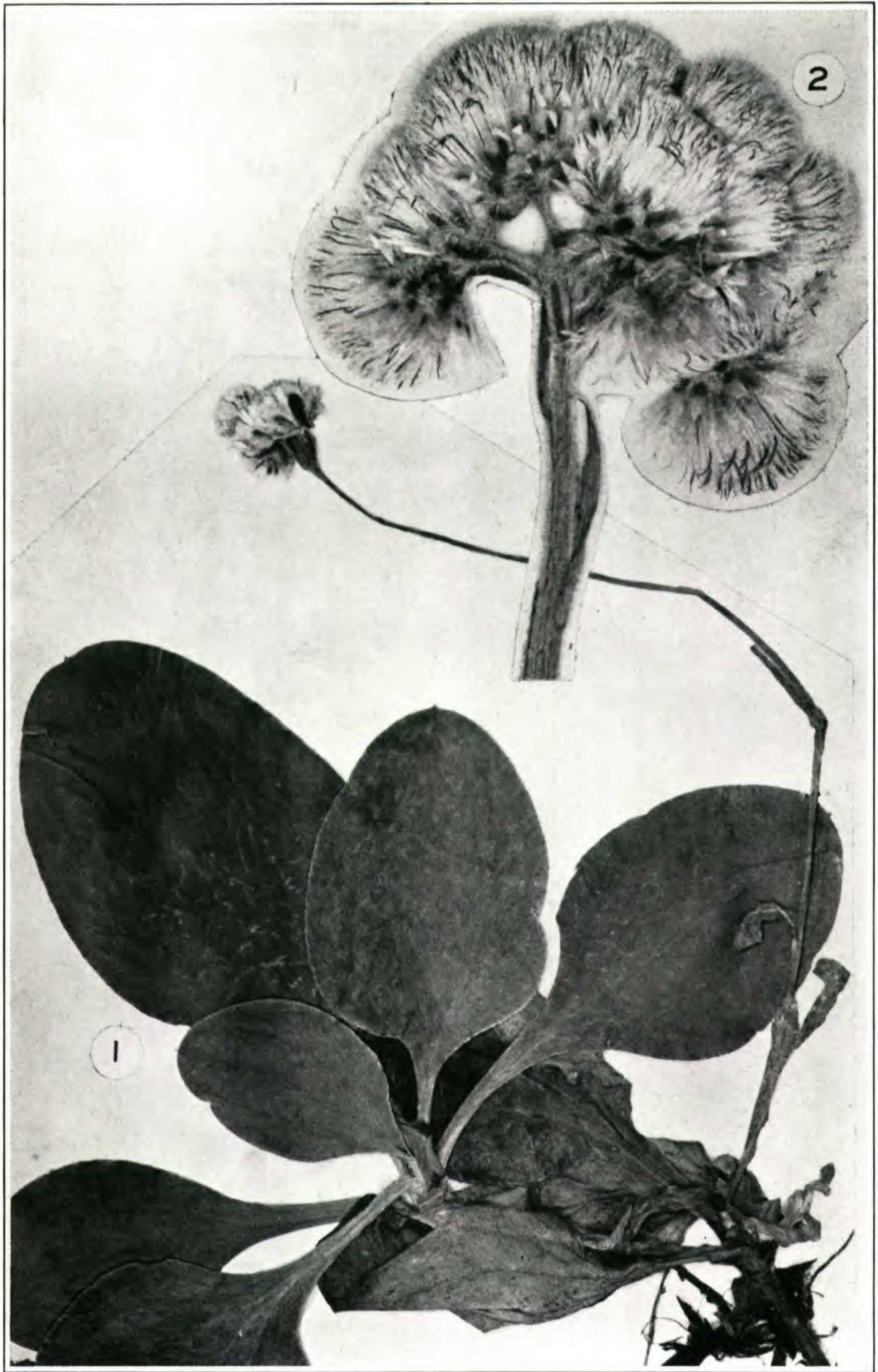


Photo. B. G. Schubert.

ANTENNARIA FALLAX, var. CALOPHYLLA: FIG. 1, staminate plant, $\times 1$; FIG. 2, pistillate corymb, $\times 2$.



Photo. B. G. Schubert.

ANTENNARIA PARLINII: FIGS. 1 and 2, base and summit of plant, $\times 1$; FIG. 3, summit of flowering stem, showing glands, $\times 10$; FIG. 4, corymb, $\times 2$; FIG. 5, achenes, $\times 10$.

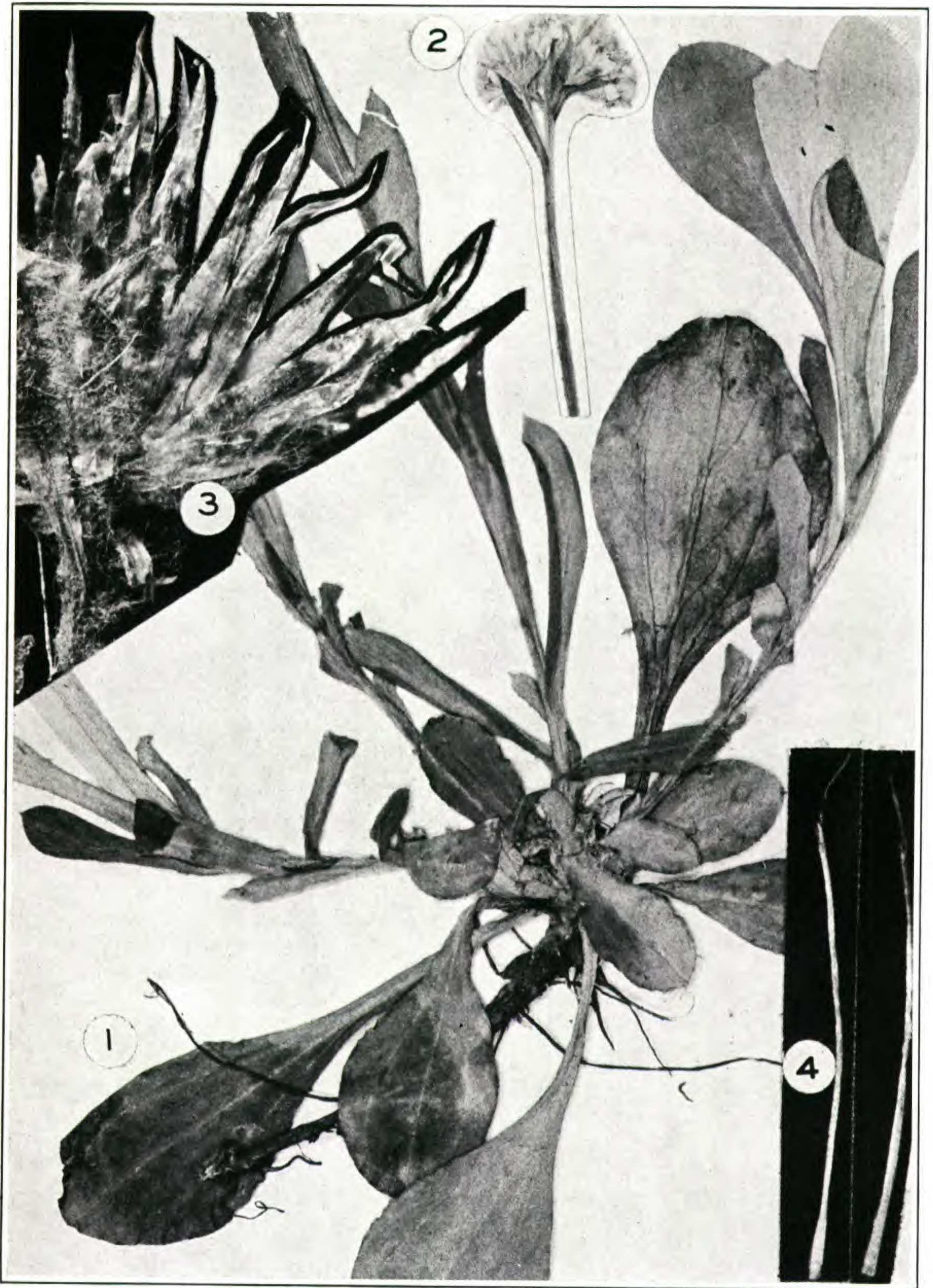


Photo. B. G. Schubert.

ANTENNARIA PARLINII: FIGS. 1 and 2, base and summit of staminate plant, $\times 1$; FIG. 3, half a pistillate involucre, $\times 5$; FIG. 4, pistillate corollas, $\times 10$.

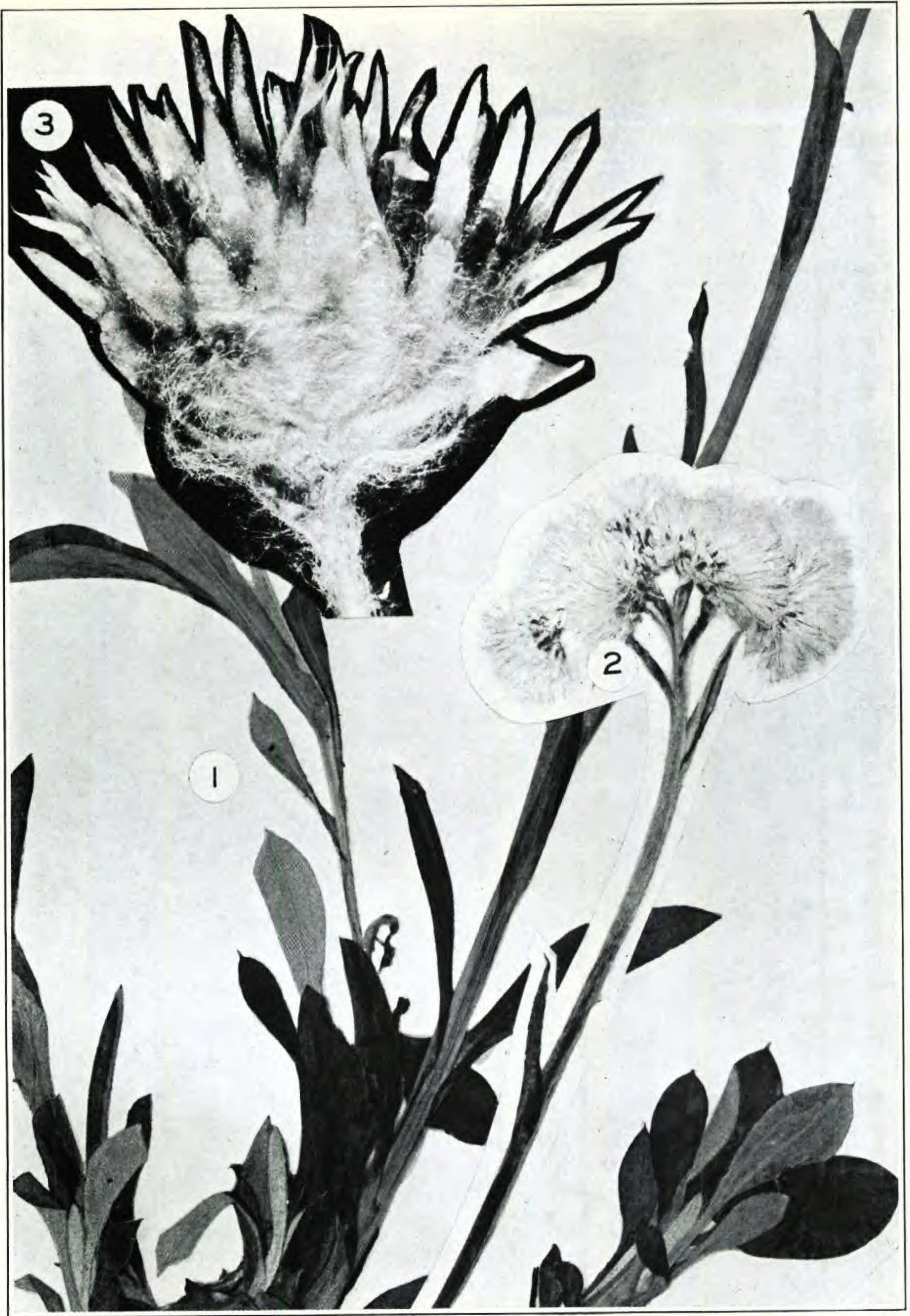


Photo. B. G. Schubert.

ANTENNARIA PARLINII, var. ARNOGLOSSA: FIGS. 1 and 2, portions of base and summit of plant, $\times 1$; FIG. 3, involucre, $\times 5$.

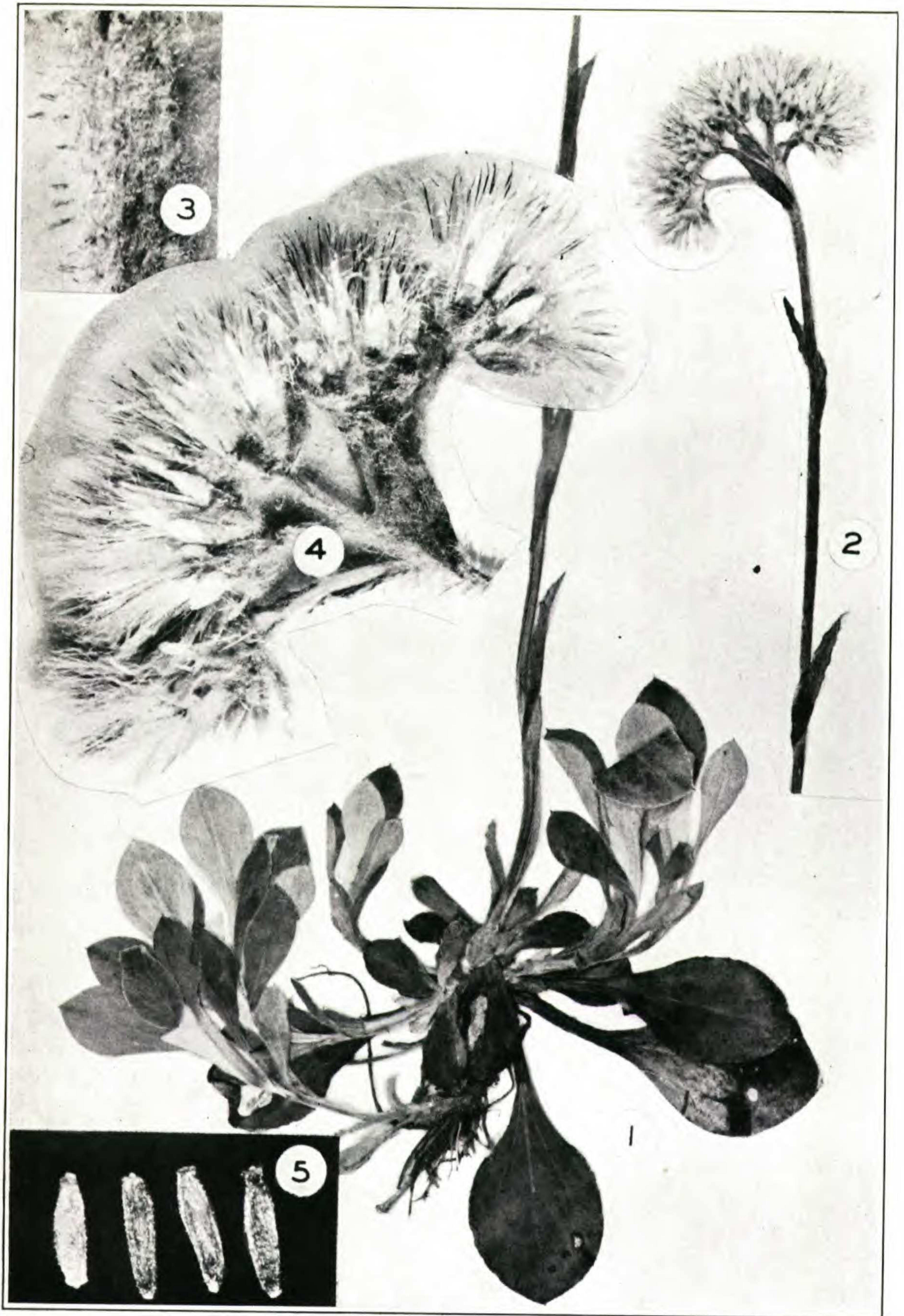


Photo. B. G. Schubert.

ANTENNARIA BRAINERDII: FIGS. 1 and 2, base and summit of plant, $\times 1$; FIG. 3, summit of stem, showing glands, $\times 10$; FIG. 4, corymb, $\times 2$; FIG. 5, achenes, $\times 10$.

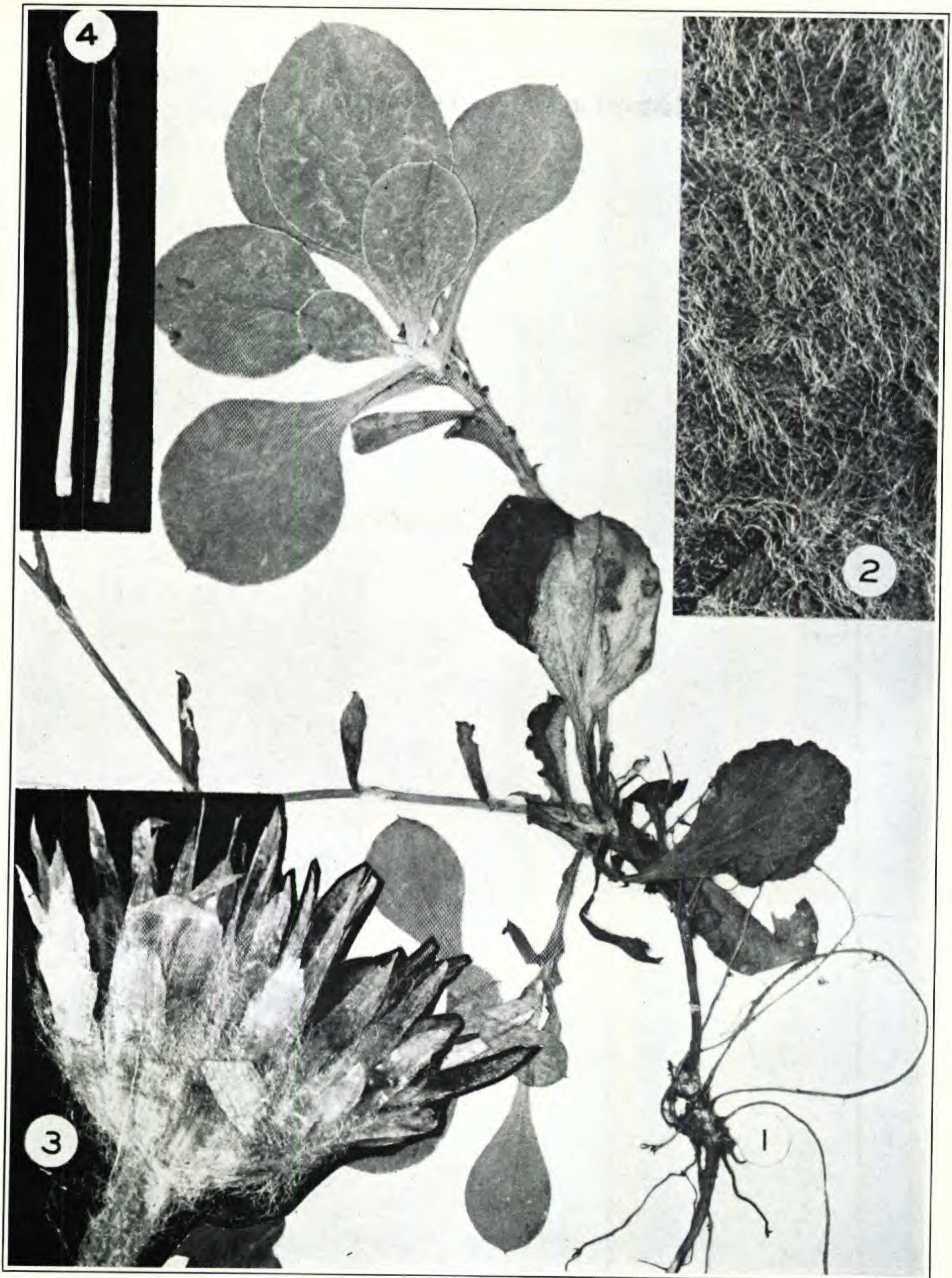


Photo. B. G. Schubert.

ANTENNARIA BRAINERDII: FIG. 1, base of large-leaved extreme, $\times 1$; FIG. 2, upper surface of rosette-leaf, showing long tomentum, $\times 10$; FIG. 3, involucre, $\times 5$; FIG. 4, corollas, $\times 10$.